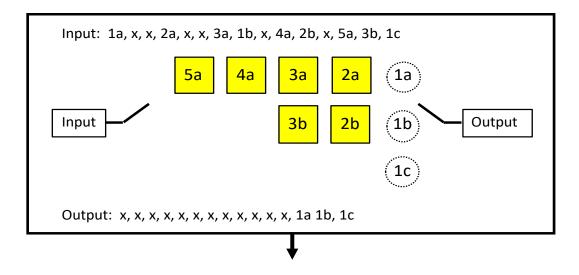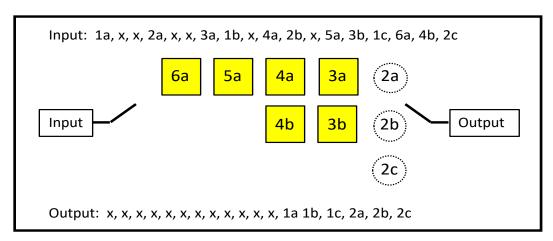# EXHIBIT D

207.   The amount of interleaver and deinterleaver memory required at each transceiver

is $\frac{\text{MAXDELAYOCTET}}{2}$. *Id.* ("The minimum amount of memory required in a transceiver (VTU-O or

VTU-R) to meet this requirement is $\frac{\text{MAXDELAYOCTET}}{2}$ octets."). MAXDELAYOCTET is equal to

the summation over all latency paths of the aggregate interleaver and deinterleaver delays, which

is written as:

$$\sum_{p}\left(I_{\text{US},p}-1\right)\times\left(D_{\text{US},p}-1\right)+\left(I_{\text{DS},p}-1\right)\times\left(D_{\text{DS},p}-1\right)$$

208.   The examples of interleaver and deinterleaver memories I described above used

very small interleaver block sizes and interleaver depths for simplicity of illustration. VDSL2

1176. It is thus my opinion that each of the CommScope CPE Products meet this limitation. As detailed below, the transceiver performs the operations recited in the remaining elements of the claims.

> c)   *transmitting or receiving a message during initialization specifying a maximum number of bytes of memory that are available to be allocated to a deinterleaver;*

1177. Each of the CommScope CPE products receive a message during initialization specifying a maximum number of bytes of memory that are available to be allocated to a deinterleaver.[1432]

1178. The CommScope CPE products receive a message during initialization. Each of the CommScope CPE Products comply with and operate according to the VDSL2 standard, which requires that, during initialization, and specifically during a channel analysis and exchange phase,

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[1432] The Court has afforded this term its plain meaning, which I will apply.

██████████████████████████████████

the O-PMS message is sent by a CO transceiver (i.e., VTU-O) and received by the CommScope CPE Products (i.e., VTU-Rs), as I explain in detail above.[1433] The outcome of the testing similarly showed that tested CommScope CPE Products (*e.g.*, the 5168) received the O-PMS message during initialization.[1434] ██

██████████████████████████████████████[5]

1179.   The message received by the CommScope CPE Products specifies a maximum number of bytes of memory that are available to be allocated to a deinterleaver. The CommScope CPE Products (as VTU-Rs) interleave upstream and deinterleave downstream. Within the O-PMS message, the max_delay_octet$_{DS,0}$ field specifies a maximum number of bytes of memory that are available to be allocated to a deinterleaver, as I discussed in detail above.[1436]

[1433] *See, e.g.*, Section V(B) and VII(C)(3)(a).

[1434] *See, e.g.*, Section VII(C)(3)(b) (discussing testing and initialization messages).

[1435] *See, e.g.*, Section VII(C)(3)(c) ████████████████████████████████

████████████████████████████████████).

[1436] *See, e.g.*, Section V(B) and VII(C)(3)(a).
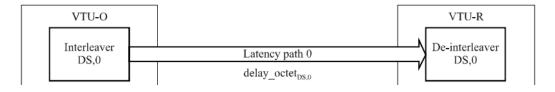
Table 12-56 – Description of message O-PMS

	Field name	Format
1	Message descriptor	Message code
2	MSGLP (Note 1)	1 byte
3	Mapping of bearer channels to latency paths	1 byte
4	B_{x0}	1 byte
5	B_{x1}	1 byte
6	LP_0 (Note 2)	Latency path descriptor
7	LP_1	Latency path descriptor
8	$max\_delay\_octet_{DS,0}$	3 bytes
9	$max\_delay\_octet_{DS,1}$	3 bytes
10	$max\_delay\_octet_{US,0}$	3 bytes
11	$max\_delay\_octet_{US,1}$	3 bytes
12	Upstream SOS tone groups	Band descriptor
13	Upstream ROC parameters	ROC descriptor
14	ITU-T G.998.4 parameter field	Variable length
15	ITU-T G.993.5 parameter field	Variable length
16	$ATTNDR\_max\_delay\_octets_{DS,p}$	3 bytes

NOTE 1 – If the ROC is enabled, MSGLP shall be equal to 0.
NOTE 2 – If the ROC is enabled, the framing parameters for latency path #0 shall be contained in the ROC descriptor.

Field #8 "$max\_delay\_octet_{DS,0}$" is a 3-byte field that specifies the maximum value of $delay\_octet_{DS,0}$ (defined in clause 6.2.8), specified in bytes as an unsigned integer.

1180. The $max\_delay\_octet_{DS,0}$ field specifies the maximum value, in bytes, of $delay\_octet_{DS,0}$. The $delay\_octet_{DS,0}$ is the end-to-end delay in bytes for latency path #0 in the downstream direction.[1437]
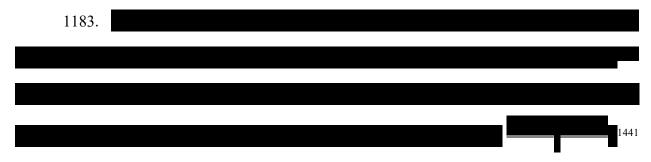

1181. For a given value of $delay\_octet_{DS,0}$, the amount of memory required for deinterleaving at the VTU-R is one half $delay\_octet_{DS,0}$.[1438] The maximum value of $delay\_octet_{DS,0}$

[1437] *See, e.g.*, Section V(B), VII(C)(3)(a).

[1438] *See, e.g.*, Section V(B), VII(C)(3)(a).

██████████████████████████████████

==thus specifies the maximum bytes of memory that are available to be allocated to a deinterleaver==

==(as it is the maximum amount of delay the system will allow).==

1182.   The testing results and analyses for the 5168 product ███████████████

████████ also shows that the max_delay_octet$_{DS,0}$ field specifies a maximum number of bytes

of memory that are available to be allocated to a deinterleaver.[1439] In each configuration that was

tested, the amount of bytes used by the deinterleaver (reflected in the latency patent description

information) was less than the amount of memory specified in the max_delay_octet$_{DS,0}$ field of

the O-PMS message as being available to allocate to the downstream deinterleaver.

1183.   ██

██

██

███[1441]

This further confirms my conclusion that each of the CommScope CPE Products receive the O-

PMS message specifying a maximum number of bytes of memory that are available to be allocated

to a deinterleaver.

> d)   *determining an amount of memory required by the deinterleaver to deinterleave a first plurality of Reed Solomon (RS) coded data bytes within a shared memory;*

1184.   The CommScope CPE Products determine an amount of memory required by the

deinterleaver to deinterleave a first plurality of Reed Solomon (RS) coded data bytes within a

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[1439] *See, e.g.*, Section VII(C)(3)(b) (showing memory allocation for various configurations).

[1440] *See, e.g.*, Section VII(C)(3)(c).

[1441] *See, e.g.*, Section VII(C)(3)(c) (████████████████████████████████).

████████████████████████████████████

    c)   ==*transmitting or receiving a message during initialization specifying a maximum number of bytes of memory that are available to be allocated to a deinterleaver;*==

==1201.   The CommScope CPE Products meet this limitation for the same reasons as I==

==explained regarding claim 13 of the '882 Patent.==[1465]

    d)   *determining an amount of memory required by the deinterleaver to deinterleave a first plurality of Reed Solomon (RS) coded data bytes within the shared memory;*

1202.   The CommScope CPE Products meet this limitation for the same reasons as I

explained regarding claim 13 of the '882 Patent.[1466]

    e)   *allocating a first number of bytes of the shared memory to the deinterleaver to deinterleave a first plurality of Reed Solomon (RS) coded data bytes for transmission at a first data rate, wherein the allocated memory for the deinterleaver does not exceed the maximum number of bytes specified in the message;*

1203.   The CommScope CPE Products meet this limitation for the same reasons as I

explained regarding claim 13 of the '882 Patent.[1467]

    f)   *allocating a second number of bytes of the shared memory to an interleaver to interleave a second plurality of RS coded data bytes received at a second data rate; and*

1204.   The CommScope CPE Products meet this limitation for the same reasons as I

explained regarding claim 13 of the '882 Patent.[1468]

[1465] *See, e.g.*, Section X(A)(B)(1)(c).

[1466] *See, e.g.*, Section X(A)(B)(1)(d).

[1467] *See, e.g.*, Section X(A)(B)(1)(e).

[1468] *See, e.g.*, Section X(A)(B)(1)(f).